

CLAIMS

1. A method of extracting a radial velocity characteristic of a target from one or more coherent radiation pulse bursts comprising the steps of:
 - 5 (a) receiving radiation echo returns of the pulse bursts from a remote scene;
 - (b) processing the echo returns into in-phase (I) and quadrature (Q) components;
 - (c) measuring returns at intervals to provide sampled data
 - (d) applying a predetermined function to the I-Q returns;
 - 10 (e) modifying the predetermined function to match the sampled data as a function of velocity; and
 - (f) determining the target radial velocity in dependence upon said modification step of the predetermined function.
2. A method as claimed in Claim 1 wherein step (d) comprises fitting a curve to the I-Q returns and step (e) comprises optimising the fit to the sampled data as a function of velocity in a least squares fashion.
- 15 3. A method as claimed in Claim 1 or 2 wherein a model of clutter return is provided for use in steps (d) and (e).
4. A method as claimed in Claim 3 wherein the model of clutter return is a
20 low order polynomial function in I and Q.
5. A method as claimed in any of the preceding claims further comprising the step of extracting target amplitude from the sampled data.
6. A method as claimed in any of the preceding claims further comprising the step of extracting range ambiguity from the sampled data.
- 25 7. A method as claimed in any of the preceding claims further comprising the step of extracting target azimuth from the sampled data.
8. A method as claimed in any of the preceding claims wherein the echo returns are measured at non-equi-spaced intervals.

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9. A method as claimed in any of the preceding claims wherein the pulse bursts are transmitted at a frequency which is changed between successive pulses.
10. A method as claimed in any of the preceding claims wherein each pulse burst consists of multiple pulses transmitted at irregular intervals.
11. A method as claimed in any of the preceding claims wherein the pulse bursts are internally coherent but mutually incoherent.
12. A method as claimed in any of the preceding claims further comprising the step of carrying out conventional Moving Target Indication/Moving Target Detection filtering and target detection before applying a predetermined function, as in step (d), to the I-Q returns in which a target was detected.
13. A microprocessor programmed to carry out the method of any of the preceding claims.
14. A program element comprising program code operable to carry out a method as claimed in any of Claims 1 to 12.
15. The program element of Claim 14 on a carrier medium.
16. A data processing system adapted and arranged to carry out a method as claimed in any of Claims 1 to 12 comprising:
 - (g) a transmitter;
 - (h) a receiver;
 - (i) an I and Q component splitter;
 - (j) an analog-to-digital converter, and
 - (k) processing means to fit a predetermined function to I and Q components according to steps (d) and (e).